

THE CLAIMS

What is claimed is:

1. A golf ball comprising:
 - 5 a center comprising:
 - a resilient polymer comprising polybutadiene having a molecular weight of greater than about 200,000;
 - a crosslinking material present in an amount of about 10 to about 40 parts per hundred of the resilient polymer;
 - 10 a free radical source present in an amount of about 0.1 to about 15 parts per hundred of the resilient polymer;
 - a cis-to-trans catalyst present in an amount sufficient to produce a center having a first amount of trans-isomer at an interior location and a second amount of trans-isomer at a surface location, wherein the first amount is at least about 6 percent less than the second amount; and
 - 15 a cover comprising a thermoplastic or thermoset polyurethane.
2. The golf ball of claim 1, wherein the first amount is at least about 10 percent less than the second amount.
- 20 3. The golf ball of claim 2, wherein the first amount is at least about 20 percent less than the second amount.
4. The golf ball of claim 1, wherein the center has an Atti compression of less than about 25 50.
5. The golf ball of claim 4, wherein the center has an Atti compression of less than about 25.
- 30 6. The golf ball of claim 1, wherein the interior location is a midpoint of the center.
7. The golf ball of claim 1, wherein the cis-to-trans catalyst comprises an organosulfur compound.

8. The golf ball of claim 7, wherein the organosulfur compound comprises less than about 3 weight percent metal.

9. The golf ball of claim 8, wherein the organosulfur compound comprises less than about 0.01 weight percent metal.

10. The golf ball of claim 1, wherein the cover has a thickness of about 0.02 inches to about 0.04 inches.

11. The golf ball of claim 1, wherein the resilient polymer comprises at least 12 percent trans-isomer at the center.

12. A golf ball comprising:

a center comprising:

a cured resilient polymer component comprising polybutadiene having a molecular weight of greater than about 200,000, wherein the cured resilient polymer component comprises a final amount of trans-isomer greater than an initial amount of trans-isomer present in an uncured resilient polymer component;

a crosslinking material present in an amount of about 10 to about 40 parts per hundred of the resilient polymer;

a free radical source present in an amount of about 0.1 to about 15 parts per hundred of the resilient polymer;

a cis-to-trans catalyst present in an amount sufficient to produce a center having a first amount of trans-isomer at an interior location and a second amount of trans-isomer at a surface location; and

a cover comprising a thermoplastic or thermoset polyurethane.

13. The golf ball of claim 12, wherein the first amount is at least about 6 percent less than the second amount.

14. The golf ball of claim 13, wherein the second amount is at least about 10 percent less than the second amount.

15. The golf ball of claim 14, wherein the second amount is at least about 20 percent less than the second amount.

16. The golf ball of claim 12, wherein the final amount of trans-isomer is at least about 12 percent based on the cured resilient polymer component.

17. The golf ball of claim 16, wherein the final amount of trans-isomer is at least about 32 percent based on the cured resilient polymer component.

18. A golf ball comprising:

a center comprising:

a resilient polymer comprising polybutadiene having a molecular weight of greater than about 250,000;

a crosslinking material present in an amount of about 10 to about 30 parts per hundred of the resilient polymer;

a free radical source present in an amount of about 0.2 to about 5 parts per hundred of the resilient polymer;

a cis-to-trans catalyst present in an amount from about 0.1 to 5 parts per hundred of the resilient polymer, wherein the center has a first amount of trans-isomer at an interior location and a second amount of trans-isomer at a surface location, wherein the first amount is at least about 6 percent less than the second amount; and

a cover comprising a castable reactive liquid material.

19. The golf ball of claim 18, wherein the first amount is at least about 10 percent less than the second amount.

20. The golf ball of claim 19, wherein the first amount is at least about 20 percent less than the second amount.

21. The golf ball of claim 18, wherein the castable reactive liquid material comprises polyurethane.